

**Vending Machine Monitoring System  
SD0802**

**Peter Kannianen  
Shannon Earley  
Birendra Thapa**

**Advisor: Dr. Schroeder**

**Appolis, Travis Smith**

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## Introduction

This project encompasses creating a device that reads status information from a vending machine controller. When there is an inventory or warning status that the vending machine owner should be aware of, the device will blink an LED/button. Consumers who press the button will be given a phone number to call and an encrypted number to enter. Upon receiving a valid encrypted number, the system will send back a code that the user can enter into the device to receive a free item from the vending machine.

## Requirements

### Objectives:

- Notify customer with indicator, code, and number to call
- Information to be transmitted from the machine to the back-end system
  - Worst-case: machine needs servicing based on inventory level of at least 1 selection
  - Next-best: which selections are low
  - Best-case: full inventory level triggering
  - Code should give information to identify the machine
  - Nice to have: Capability for transmitting at certain times
- Automated phone call system verifies code from machine and returns a code for a free item from the machine to be entered into keypad (for this phase, this function will likely be simulated via web page provided by Appolis.)
- [Nice to have: send behavioral changes back from response within the encrypted code \(change from alerts on 1 inventory item left to another number\)](#)
- Make sure codes can not be re-used, and that after free item is issued, sensor will not trigger another indication until the machine has been reset (re-filled)

### User Requirements:

- Provide Appolis with encryption algorithm for decrypting the code from the device in C#
- Visual Studio Express 2008

### Design Constraints:

- No more than 16 numbers in code (4 sets of 4 digits)
- Use a splitter on the DEX connector to keep the port open
- Size
  - Want all hardware to fit inside machine except LCD, LED, button, and keypad, connected by a ribbon cable or equivalent
- Object oriented programming, using C# if at all possible

### Functions:

- Will need to communicate and transmit to machine
  - DEX is the communication standard for data being transmitted from the machine

- Dispensing the free item

## Summary

The purpose of this project will be to change how vending machines communicate with suppliers when they need to be serviced or re-filled. This project proposes a more cost-effective solution than wireless communication. The customer at the vending machine will be given a code from a module and a phone number to call and enter the code. In return, the customer will receive code to enter back into the module to receive a free item from the vending machine. This project will encompass encrypting the codes so that customers cannot guess the code for getting free items from the machine. The module will have a keypad and will need to receive the data provided by the machine.

